

# Notice of Allowability

Application No.

10/636,042

Applicant(s)

JUSTISS ET AL.

Examiner

Kaushikkumar Patel

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## -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to applicant's communication filed on December 22, 2006.
2. ☒ The allowed claim(s) is/are 1-2 and 4-23.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.


Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

### Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
HYUNG SOUH  
SUPERVISORY PATENT EXAMINER  
4-02-07

## DETAILED ACTION

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with John L. Adair (Reg. No. 48,828) on April 02, 2007.

The application has been amended as follows:

Claim 1. (Currently Amended) A method for retrieving data from a sequential storage device on which blocks of data corresponding to multiple threads are stored in an intermingled fashion, comprising:

reading a log, wherein the log identifies a sequence in which the blocks of data corresponding to the multiple threads are stored on [[a]] the sequential storage device, wherein each thread corresponds to an Extended Copy command from a plurality of Extended Copy commands; [[and]]

identifying at least a portion of the blocks of data as corresponding to one of the multiple threads using the log; [[and]]

indexing to the location of the identified portion of the blocks of data in the sequence in which the blocks of data corresponding to the multiple threads are stored on the sequential storage device according to the log; and

retrieving the identified portion of the blocks of data from the sequential storage device.

Claims 2. (Currently Amended) The method of claim 1, wherein indexing to the location of the identified portion of the blocks of data in the sequence comprises counting a first number of the blocks of data preceding the identified portion of the blocks of data in the log and advancing the first number of the blocks of data on the sequential storage device.

Claim 3. (Canceled).

Claim 4. (Currently Amended) The method of claim 1, wherein the log includes indications of file marks in the stored blocks of data and wherein indexing to the location of the identified portion of the blocks of data in the sequence comprises counting a first number of file marks preceding the identified portion of the blocks of data in the log and advancing the first number of file marks on the sequential storage device.

Claim 5. (Original) The method of claim 4, further comprising retrieving the identified portion of the blocks of data from the sequential storage device.

Claim 6. (Original) The method of claim 1, further comprising storing the blocks of data on the sequential storage device and writing the log prior to reading the log.

Claim 7. (Currently Amended) The method of claim 1, wherein each entry in the log identifies a corresponding thread of the multiple threads and a number of the blocks of data stored consecutively on the sequential storage device.

Claim 8. (Currently Amended) The method of claim 7, wherein each thread of the multiple threads is identified by a corresponding device identifier.

Claim 9. (Original) The method of claim 1, wherein the log is stored on the sequential storage device and the log is read from the sequential storage device.

Claim 10. (Original) The method of claim 1, wherein the log is stored on a storage medium separate from the sequential storage device and the log is read from the separate storage medium.

Claim 11. (Currently Amended) A method for managing storage of blocks of data on a sequential storage device, wherein the blocks of data corresponding to multiple threads are stored on the sequential storage device in an intermingled fashion, comprising:  
storing a sequence of the blocks of data on ~~[[a]]~~ the sequential storage device, wherein the blocks of data correspond to ~~[[the]]~~ a multiple write threads of the multiple threads, wherein the blocks of data corresponding to different write threads of the multiple threads are intermingled on the sequential storage device and wherein each

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thread of the multiple thread corresponds to an Extended Copy command from a plurality of Extended Copy commands;

recording the order in which the blocks of data are stored in a log, wherein the log identifies the write thread to which each block belongs such that a copy manager can index to a particular block of data without reading each of the preceding stored blocks of data or associated metadata; [[and]]

retrieving the particular block of data from the sequential storage device; and  
storing the log.

Claim 12. (Original) The method of claim 11, wherein recording the order in which the blocks of data are stored comprises recording entries corresponding to write commands in the log.

Claim 13. (Original) The method of claim 11, further comprising storing the log on the sequential storage device.

Claim 14. (Original) The method of claim 11, further comprising storing the log on a storage medium, which is separate from the sequential storage device.

Claim 15. (Currently Amended) The method of claim 11, further comprising identifying at least a portion of the blocks of data corresponding to one of the multiple threads, identifying the position of entries in the log corresponding to the identified portion of the

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blocks of data, and indexing to the location of the identified portion of the blocks of data corresponding to one of the multiple threads in the sequence of blocks of data stored on the sequential storage device based upon the identified portion of the blocks of data in the log.

Claim 16. (Currently Amended) A system for managing blocks of data on a sequential storage device, wherein the blocks of data corresponding to multiple threads are stored on the sequential storage device in an intermingled fashion, comprising:

[[a]] the sequential storage device configured to store intermingled blocks of data corresponding to the multiple threads, wherein each thread corresponds to an Extended Copy command from a plurality of Extended Copy commands;

a copy manager coupled to the sequential storage device and configured to manage the retrieval of desired blocks of data from the sequential storage device; and

a memory coupled to the copy manager and configured to store a sequence in which the blocks of data corresponding to the multiple threads are stored on the sequential storage device;

wherein the copy manager is configured to identify the position of the desired blocks of data in the sequence stored in the memory using a log, to advance to a corresponding storage location on the sequential storage device without reading each of [[the]] a preceding stored blocks of data or associated metadata, and to retrieve the desired blocks of data from the sequential storage device.

Claim 17. (Original) The system of claim 16, wherein the copy manager is further configured to store the sequence of the stored data blocks in the memory.

Claim 18. (Currently Amended) The system of claim 16, wherein the copy manager is configured to copy the blocks of data to the sequential storage device according to [[a]] the plurality of extended copy commands.

Claim 19. (Currently Amended) The system Of claim 16, further comprising one or more hosts coupled to the copy manager, wherein the copy manager is configured to store the blocks of data on the sequential storage device according to the plurality of Extended Copy ~~extended copy~~ commands issued by [[the]] one or more hosts.

Claim 20. (Currently Amended) The system of claim 19, further comprising a plurality of data sources, wherein the copy manager is configured to copy data from each of the plurality of data sources in a plurality of corresponding multiple threads.

Claim 21. (Original) The system of claim 16, wherein the copy manager is implemented in a switch fabric.

Claim 22. (Original) The system of claim 16, wherein the copy manager is implemented in a network attached device.

Claim 23. (Currently Amended) A software product comprising one or more instructions embodied in a medium readable by a data processor, wherein the instructions are configured to cause the data processor to execute the method comprising:

reading a log, wherein the log identifies a sequence in which blocks of data corresponding to multiple threads are stored on a sequential storage device, wherein each thread corresponds to an Extended Copy command from a plurality of Extended Copy commands;

identifying at least a portion of the blocks of data as corresponding to one of the threads using the log; [[and]]

indexing to the location of the identified portion of the blocks of data in the sequence of blocks of data stored on the sequential device according to the log; and

retrieving the identified portion of the blocks of data from the sequential storage device.

***Allowable Subject Matter***

2. Claims 1-2 and 4-23 are allowed.

3. The following is an examiner's statement of reasons for allowance:

As per independent claims 1, 11 and 16, prior arts of record fail to teach or suggest intermingling data corresponding to multiple threads of plurality of Extended Copy commands on sequential storage device.



As per independent claim 23, prior arts of record fail to teach or suggest retrieving data corresponding to a thread of Extended Copy command of plurality Extended Copy commands from a sequential storage device.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaushikkumar Patel whose telephone number is 571-272-5536. The examiner can normally be reached on 8.00 am - 4.30 pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hyung Sough can be reached on 571-272-6799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
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